PROGRAM ELEMENTS

The source of guidance on AML issues is Loss Control Management, NPS-50, Chapter 30, Abandoned Mine Safety and Minerals Management Guideline NPS-66, Chapter X. The following text is paraphrased from NPS-50, Chapter 30.

LEGAL AUTHORITY

36 CFR 9.11; Surface Mining Control and Reclamation Act, 30 U.S.C. § 1201, 1202; The National Environmental Policy Act (NEPA), 42 U.S.C. § 4321, 4331; Mining in the Parks Act: 16 U.S.C. § 1901 et seq.; Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 et seq.; The Occupational Safety and Health Act; Public Law 91-596, 29 CFR 1910.132, 134, 135, 136., 29 CFR 1960.1; Federal Tort Claims Act, 28 U.S.C. § 1346(b), 2671 et seq.

PROGRAM OBJECTIVES

The objectives for managing an AML program are broad-based and incorporate many facets of the National Park Service's (NPS) overall administrative responsibilities. There are four major objectives:

A. Elimination or mitigation of safety and health hazards associated with AML sites.

B. Mitigation of impacts to NPS resources.

C. Preservation of historically or culturally significant AML sites.

D. Management for specific wildlife habitats, especially threatened and endangered species.

PROGRAM REQUIREMENTS

A. **Site Inventory** - The first requisite of the program is to obtain a complete inventory of all the AML sites administered by NPS. The inventory should be an on-the-ground site inspection. This inventory may be complicated by the fact that many sites are in remote locations, access is difficult, and, in some parks, sites are so numerous that a complete AML inventory may take several years. Techniques for site investigation are found in Tabs IV and VII.

1. **Team Selection** - Inventories should be conducted by a team of at least two individuals. This approach allows multiple disciplines to be represented and provides for assistance in case of an accident. The team leader or coordinator should be a field person with an

understanding of collecting analytical data. This person should be well versed in identification and evaluation of AML sites and in recognition of hazards associated with each site. The team leader should ensure that members are briefed on potential hazards and trained on AML safety procedures.

2. **Presite Inspection Research** - The "on-the-ground" work will be most effective if some background research is done. This can include a brief literature search, obtaining existing maps and perhaps doing a fly-over of the area before going into the field. The following list provides possible sources of information and what to look for.

Sources of Information:

* USGS topographic maps.
* Maps and records of land status and mining claims.
* USGS publications and geologic maps.
* Industry maps and reports.
* Aerial photographs.
* Aerial reconnaissance.
* Interviews with old timers.
* Historic resource inventory.
* Historic publications and early accounts of area.
* Land protection plan.
* Foot search.

What to Look For:

* Topographic contours sometimes reveal mine
* features.
* Waste rock.
* Disturbed and subsided lands.
* Old roads and railbeds.
* Underground openings (adits, shafts, stopes).
* Structures, buildings, headframes.
* Symbols on maps.
* Developed springs, reservoirs, ditches.

3. **Preparation and Entry Procedures** - AML sites are inherently hazardous and must be treated as such by the park staff. Many hazards are not obvious and some cannot be detected without instruments. In most cases, there is no need to enter any of the abandoned mine workings; they are too dangerous. Coal mines in particular will not be entered unless substantial justification overrides safety concerns. Underground evaluations or reconnaissance should be conducted only by properly trained and equipped personnel and generally are necessary only where it is likely that visitors would enter the mines if they were in the

area. Underground mines that are not entered for evaluation should be considered very hazardous and a high priority for closure.

In the event entry is necessary, the team should be well prepared and trained. The team should have available to them the following items:

* Safety boots, gloves, hard hat, mine light, spare light, scaling bar, safety glasses.
* Multi-gas detector.
* At least two sources of light; all sources should
* be explosion-proof unless it has been previously determined that no explosive gases are present.
* Communication with someone outside the mine or site depending on the location of the site.
* Mine rescue contingency plan with trained rescue personnel and equipment available to respond in the event of an emergency.

Additional guidance on safety is given in Tabs VI and VII.

The following is a listing of potential hazards associated with AML sites:

Shafts may be hidden or have loose rock and rotten timbers.
Explosives may be deteriorated and unstable.
Water contaminated or may hide vertical shafts or conceal sharp rusty metal and creates a slipping hazard.
Dangerous Substances - left over from when the mine was active such as cyanide, ammonia and PCPs; asbestos insulation, etc.
Debris on the Floor - broken glass, nails, sharp and rusted objects.
Cave-ins or Cave-in Potential - Most mines were never meant to last more than a few years. Due to age, weathering and rotten shoring, walls and ceilings are susceptible to collapse.
Bad Air - insufficient oxygen, poisonous gases and explosive gases.
Animals - poisonous snakes, spiders, scorpions, rats, bears, mountain lions, wasps, bees, bats, etc.

DO NOT ENTER UNDERGROUND COAL MINES. DO NOT ENTER OTHER UNDERGROUND MINES IF CONDITIONS INDICATE THAT A CAVE-IN IS POSSIBLE, OR BAD AIR IS PRESENT.

4. **Documentation** - Forms have been developed for data collection. [See Tab VII.] They are in a checklist format and also provide for photographs. Each hazard at a specific site should be identified. Copies of the AML inventory, reconnaissance and monitoring forms should be filed with the Mining and Minerals Branch (MMB) of the Washington Office (WASO) to update their nationwide AML data base. "As built" plans of AML remediation projects should be sent to MMB.

B. **Hazard Mitigation** - A mitigation plan addressing all known AML sites in each park should be developed. The plan should include what is known about the sites, proposed actions, information and funding needs, and a list of action priorities. Alternative mitigation includes:

1. **Immediate, Short-Term Procedures**

Post signs - Signs should be posted warning visitors of an abandoned mine, the hazards inherent with the site, and telling them to stay out. Signs should be designed to communicate the hazards to the broadest range of visitors including children and those who do not read English. Signs should be posted in the proximity of the AML site. If a number of sites exist in a particular area, signs warning of the presence of AML sites should be strategically placed at common access points where possible. Signs must be monitored periodically to see that they are not stolen or vandalized.

Discontinue leading interpretative walks or other entry into mine workings if hazards have been noted with a potential for injury. The Regional Safety Officer should be notified of the situation as soon as possible. Only when corrective measures have been taken, will the public be allowed access. The Regional Safety Officer will approve in writing the resumption of visitor-related activities at the AML site.

Abandoned explosives are a critical hazard that must be addressed immediately. All abandoned explosives must be disposed of by a specialist certified in explosives disposal. Certified blasters are not trained in the recognition, handling, and disposal of old and/or deteriorated explosive products.

Provide appropriate warning information in park literature and delete references to AML sites unless the sites have been made safe or until appropriate warning signs have been posted.

During interpretive talks, include appropriate warnings and information about AML sites.

2. **Intermediate, Reversible Solutions** - Installation of bulkheads, fencing, cinder block or stone walls, grating, netting, bat gates, etc. Intermediate closure methods vary widely in cost and effectiveness.

3. **Long-Term solutions** - Backfilling or blasting mine openings, recontouring and revegetating disturbed lands.

C. **Hazardous Waste** - The regional hazardous waste coordinator should be contacted if there appears to be soil, surface water, and/or groundwater contamination or other chemicals associated with the AML site. In many cases, it is difficult to tell through a visual inspection if there are hazardous wastes in the soil, air or water. Samples will be collected and analyzed.

D. **Mine Rescue Contingency Planning** - Mine rescue can be extremely dangerous. Life-threatening hazards can be present that are not apparent, even to those experienced in mine or other kinds of rescue operations. Rescuers have been killed because they followed a victim, and were unprepared for the hazard.

NPS parks with AML sites that have a potential for visitors or employees to become trapped, injured, or ill must develop a mine rescue contingency plan. This plan must be integrated into the park's emergency operations plan. The plan should be a concise reference that is available in the park dispatch, and search and rescue offices. Each plan should include the following elements:

1. **Known Hazards** - Those hazardous conditions that are known to exist and the specific mine openings where they occur.

2. **Other Suspected Hazards** - Hazards that are common to the area and the type of mines found in the park.

3. **Mine Rescue Contacts** - Specific names, phone numbers, and backup phone numbers of mine rescue organizations and individuals to be contacted for assistance. Sources of expertise will include the office of the State mine inspector, State and county search and rescue organizations, and professional mining organizations.

4. **Special Considerations** - Conditions under which body recoveries will not be attempted due to extremely hazardous conditions.

E. **Monitoring and Enforcement** - Regular patrols should be made to AML sites to ensure that safeguards remain in place. In

addition, patrols should monitor changing conditions that create the need for additional work to make AML sites safe.

F. **Interpretation of Abandoned Mines** - Visitors are often very interested in abandoned mine sites and will seek them out. In addition, there are cultural and historic opportunities for NPS to interpret many sites. However, AML visits and interpretation should not be done in a manner that will exposes visitors to undue hazards. AML sites should be fully evaluated for safety hazards prior to taking actions that encourage visitation and exploration.

G. **Mine Tours** - Taking visitors into mines or encouraging them to explore mines on their own requires a mine monitoring and maintenance program that is beyond the capabilities of all but a very few parks. Mines are temporary features that require frequent maintenance to remain open and safe. A mine that is sound today may not be in the future, and many sites can never be made safe. Parks which offer tours of mines need a mine safety specialist on staff and a regular monitoring schedule.